



Counterdrug Technology

Advanced Systems to Help Law Enforcement and Medical Science in the Struggle Against Drug Crime and Abuse

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Pushing the Envelope: A Report from Dr. Al Brandenstein CTAC's Director & Chief Scientist, ONDCP

These are exciting, challenging times for those of us who are applying science to the struggle against drug abuse and drug crime. In both medicine and law enforcement, CTAC is privileged to be playing a central role in the development and deployment of state of the art advanced technology. We are sponsoring some of the finest minds in the nation and their work gives us new hope as we seek more knowledge, better answers, and new medications to treat and prevent abuse while we make cops more effective and safer in their vital work.

Today, state and local police and prosecutors who have received help from CTAC's Technology Transfer Program are damaging drug dealers' operations across America. This CTAC program provides systems and devices that digitize wiretaps, covertly track suspects, securely share investigative information among regional law enforcement agencies, stabilize shaky surveillance video, detect hidden cash and drugs, locate money launderers, and see quite effectively through darkness. They are operational right now in over 1300 law enforcement agencies in all 50 states, as we fulfill an important Congressional mandate to bring federally developed technology to bear against drug crime at the local level.

In the pages of this magazine, you will get first person reports from police managers in Texas, New York, and Oklahoma, whose departments are making regular, highly successful use of these systems. Meanwhile, CTAC-sponsored, nonintrusive inspection systems are being used by the U.S. Customs Service to probe railroad cars as well as trucks and cargo containers for hidden narcotics. CTAC is also supporting research leading what we believe will be next-generation systems. They are designed not only to detect the presence of contraband but also to tell law enforcement exactly what kind of contraband is being hidden inside suspect containers without having to open them.

At the same time, CTAC-funded medical research—our biggest R&D investment—is underway to learn more



Dr. Brandenstein at brain research center in Boston.

about the brain and create new medications to fight drug abuse. Among these endeavors are the bold, anticocaine projects at Columbia and Emory Universities, where Don Landry and Mike Kuhar have made major strides towards the development of medications to block cocaine overdose and prevent and treat addiction. Then there are the inspiring brain imaging projects at major medical research centers across the nation. What CTAC has done in this arena is to provide the world's most advanced brain imaging machines in exchange for a commitment from famed research institutions to devote significant time on the new brain scanners to drugs of abuse research. As part of the exchange, the research centers are training the next generation of medical researchers in this field which traditionally has not attracted much interest from bright young minds because of the stigma attached to drugs and the low priority given to it by the pharmaceutical industry.

A team of medical scientists led by Dr. Nora Volkow at Brookhaven National Laboratory in New York State has used a Positron Emission Tomography machine, known as



Addict prepares to undergo brain scan.

a PET scanner, and provided by CTAC, to examine the brains of former methamphetamine addicts. They had been off methamphetamines for as long as 11 months. What Dr. Volkow and her team discovered is chilling but not unexpected. Reported in the American Journal of Psychiatry, their study, funded by the National Institute on Drug Abuse, says the brains of these people appear permanently changed, leaving them with impaired memory and reduced physical coordination.

One of the reasons CTAC exists is to push the technology envelope on both demand reduction and supply reduction. Right now, for example, we're supporting scientists at the Massachusetts Institute of Technology's Lincoln Laboratory who have a new way of using lasers and ion spectrometry for detecting the presence of illegal drugs in sealed containers. The theory is exciting and we have decided to sponsor the work required to determine if the

two technologies when combined will translate into a practical tool for law enforcement. CTAC's mission encourages us to look at bold new approaches and it puts us in contact with some uniquely talented people, like the auto mechanic who invented a rapid pursuit boat for busting drug smugglers. His story is also in this edition of COUNTERDRUG TECHNOLOGY.

During my more than 15 years at Defense and at ONDCP's CTAC, I've often been asked by friends outside government if the persistence of the drug crisis didn't make me doubt the focus of our efforts. When I could reply by describing some of our technology R&D programs and goals, they would often say, "Well, let's see if it ever works in the real world."

Today, the federal government's leveraged investment in counterdrug research and development is paying off across the horizon of science: from deep inquiry into the workings of the human brain to a canine breeding program that is producing the first U.S. line of drug-detecting dogs.

Meanwhile, the Thermal Imagers you see officers training on in the photo on this page, and some of the other Technology Transfer Program's systems and devices have directly reduced risk for cops while increasing their effectiveness. That is enormously satisfying for all of us, including the technology developers, the Army program managers who administer the Technology Transfer Program for us, and for my core team at CTAC.

Of course, genuine R&D always has some failures associated with it, but there is every reason to expect even more good news in the near future from this office as many of our investments in brilliant, innovative, scientific minds continue to pay off. Thanks for taking the time to learn about our work. Feel free to contact me at

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Image from CTAC Video